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EXAMINER	
CONOVER, DAMON M	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 04/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)	
	10/087,001	RATNER ET AL.	
	Examiner	Art Unit	
	Damon Conover	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 02 February 2006.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1,2 and 4-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-2 and 4-20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The amendment filed 2 February 2006 has been entered and made of record.

Response to Amendment

2. The applicant has canceled claim 3, therefore the rejection of claim 3 has been withdrawn.

3. Applicant's arguments with respect to claims 1, 9, and 19-20 have been considered but are moot in view of the new ground(s) of rejection.

Double Patenting

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

4. Claims 1, 9, 16-18, and 20 are rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 1, 10, 19-21, and 23 of prior U.S. Patent No. 6,947,605. This is a double patenting rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-2, 8-10, and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama and admitted prior art (admission), in view of Acharya et al.

With respect to claim 1, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). Murayama describes that the invention detects feature points of an input video signal and identifies chain codes (edge chains) by chain coding the feature amount and coordinates of the feature points (column 5, lines 8-10). The predetermined index value (length of the chain and/or the edge intensity of the chain) is obtained for each chain (column 5, lines 37-39) and is compared to the predetermined threshold value T or S (column 5, lines 42-43). Chain codes with index values at or below the threshold values T or S are eliminated (column 5, lines 42-46).

Murayama does not describe that the chain codes are identified using a point-based threshold function.

The applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the point based threshold to extract candidate edge points as taught in the applicant's admission with the video signal decoding method of Murayama, in order to more accurately identify chains.

Neither Murayama, nor the applicant's admission expressly describe that the dynamic chain-based threshold is dependent on a characteristic of the image being processed.

Acharya et al. disclose a method for dynamically determining the threshold value for edge detection of an image based on intensity change information (abstract). Acharya et al. identify a localization region of the image (column 3, line 66 – column 4, line 2) and use the mean, minimum, and maximum intensity values of the region to select a threshold: threshold $= ((\text{mean-min})/(\text{max-min}))^{0.45}$ (column 4, lines 16-23 and column 5, line 15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama and

the admitted prior art, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

With respect to claim 2, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). The applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points.

Neither Murayama, nor the applicant's admission expressly describe that the characteristic of the image comprises a global characteristic of the image.

Acharya et al. define the localization region as a percentage of the total captured image size and may be large or small (column 4, lines 2- 7). Intensity is a global characteristic of the localization region, and Acharya et al. allow for the localization region to be 100 percent of the captured image size.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama and the admitted prior art, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

With respect to claim 8, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature

points (column 1, lines 14-17). The applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points.

Neither Murayama, nor the applicant's admission expressly describe that the dynamic chain-based threshold function comprises a linear function of the global characteristic.

Acharya et al. select a threshold that is a linear function of the mean, minimum, and maximum intensity values of the image (column 4, lines 16-23): threshold = $((\text{mean-min})/(\text{max-min}))^{0.45}$ (column 5, line 15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama and the admitted prior art, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

With respect to claims 9-10 and 15, the "apparatus for image processing" corresponds to the "method for image processing" of claims 1-2 and 8. The discussion is the same as addressed above.

With respect to claims 16-18, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). Murayama describe both a chain coding circuit 30

(column 11, line 6 – column 13, line 21 and Figure 10) and chain decoding apparatus 40 (column 14, lines 1-46 and Figure 14).

6. Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama in view of Acharya et al.

With respect to claim 19, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). Murayama describes that the invention detects feature points of an input video signal and identifies chain codes (edge chains) by chain coding the feature amount and coordinates of the feature points (column 5, lines 8-10). The predetermined index value (length of the chain and/or the edge intensity of the chain) is obtained for each chain (column 5, lines 37-39) and is compared to the predetermined threshold value T or S (column 5, lines 42-43). Chain codes with index values at or below the threshold values T or S are eliminated (column 5, lines 42-46).

Murayama does not describe that the dynamic chain-based threshold is dependent on a global characteristic of the image being processed.

Acharya et al. disclose a method for dynamically determining the threshold value for edge detection of an image based on intensity change information (abstract). Acharya et al. identify a localization region of the image (column 3, line 66 – column 4, line 2) and use the mean, minimum, and maximum intensity values of the region to select a threshold: threshold $= ((\text{mean-min})/(\text{max-min}))^{0.45}$ (column 4, lines 16-23 and column 5, line 15). Acharya et al. define the localization region as a percentage of the

total captured image size and may be large or small (column 4, lines 2- 7). Intensity is a global characteristic of the localization region, and Acharya et al. allow for the localization region to be 100 percent of the captured image size.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

With respect to claim 20, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). Murayama describes that the invention detects feature points of an input video signal and identifies chain codes (edge chains) by chain coding the feature amount and coordinates of the feature points (column 5, lines 8-10). The predetermined index value (length of the chain and/or the edge intensity of the chain) is obtained for each chain (column 5, lines 37-39) and is compared to the predetermined threshold value T or S (column 5, lines 42-43). Chain codes with index values at or below the threshold values T or S are eliminated (column 5, lines 42-46). Murayama describe both a chain coding circuit 30 (column 11, line 6 – column 13, line 21 and Figure 10) and chain decoding apparatus 40 (column 14, lines 1-46 and Figure 14).

Murayama does not describe that the dynamic chain-based threshold is dependent on a characteristic of the image being processed.

Acharya et al. disclose a method for dynamically determining the threshold value for edge detection of an image based on intensity change information (abstract). Acharya et al. identify a localization region of the image (column 3, line 66 – column 4, line 2) and use the mean, minimum, and maximum intensity values of the region to select a threshold: threshold = $((\text{mean-min})/(\text{max-min}))^{0.45}$ (column 4, lines 16-23 and column 5, line 15).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

7. Claims 4-7 and 11-14 rejected under 35 U.S.C. 103(a) as being unpatentable over Murayama, admitted prior art (admission), and Acharya et al. as applied to claims 1-2, 8-10, and 15 above, and further in view of Bonneau et al. (U.S. Patent 6,002,794).

With respect to claim 4, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). The applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points. Acharya et al. define the localization region as a percentage of the total captured image size and may be large or small (column 4, lines 2- 7). Intensity is a global characteristic of the localization region,

and Acharya et al. allows for the localization region to be 100 percent of the captured image size.

Neither Murayama, the applicant's admission, nor Acharya et al. expressly describe that the global characteristic comprises a measure of color variation.

Bonneau et al. disclose a technique for encoding and decoding color digital images which includes a step for chain coding regions of the image to identify outside edges of objects (column 18, lines 41-43). Bonneau et al. produce encoded images separated by color components (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in video signal decoding method of Murayama, admitted prior art, and Acharya et al., the technique for decomposing color images into intensity values for each color component (red, blue, and green) (column 4, lines 6-9) as taught by Bonneau et al., in order to capture the edges that are undetected when color information is not considered.

With respect to claim 5 and 6, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). The applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points. Acharya et al. disclose a method for dynamically determining the threshold value for edge detection of

an image based on intensity change information, and that mean intensity change information is used to select a threshold (column 4, lines 16-23 and column 5, line 15).

Acharya further disclose in the background of the invention that an edge of an image may be defined by its intensity and/or color change (color variation) between pixels (column 1, lines 14-16), but neither Murayama, the applicant's admission, nor Acharya et al. expressly describe steps for executing the method for a color image.

As discussed above, Bonneau et al. disclose a technique for producing an encoded image separated by color components (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the method for selecting a threshold using mean intensity change information of Murayama, the applicant's admission, and Acharya et al., the technique for decomposing color images into intensity values for each color component (red, blue, and green) (column 4, lines 6-9) as taught by Bonneau et al., in order to capture the edges that are undetected when color information is not considered. It would also have been obvious for an embodiment to use the median measure of color variation in place if the mean measure of color variation, as a design choice.

With respect to claim 7, as discussed above, Murayama discloses a video signal decoding apparatus and method which reduces the amount of generating code by detecting feature points of motion picture and chain coding the data of the feature points (column 1, lines 14-17). Murayama describes that the invention detects feature points of an input video signal and identifies chain codes (edge chains) by chain coding the feature amount and coordinates of the feature points (column 5, lines 8-10). The

applicant discloses on page 2, paragraph 1 of the specification that an edge extraction technique referred to as Canny edge detection applies a point-based threshold to candidate edge points.

Neither Murayama, nor the applicant's admission expressly describe that the global measure is calculated over the candidate edge chains within the image.

Acharya et al. disclose a method for dynamically determining the threshold value for edge detection of an image based on intensity change information, where intensity is a global characteristic of the localization region (abstract).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the dynamic threshold as taught by Acharya et al., in place of the predetermined threshold value of the video signal decoding method of Murayama, in order to tune the threshold based on the candidate image (Acharya et al., column 2, lines 39-50).

With respect to claims 11-14, the "apparatus for image processing" corresponds to the "method for image processing" of claim 4-7. The discussion is the same as addressed above.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Damon Conover whose telephone number is (571) 272-5448. The examiner can normally be reached Monday – Friday, 8:00 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso, can be reached at (571) 272-7695. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JINGGE WU
PRIMARY EXAMINER